

**United States Military Academy  
West Point, New York 10996**

# **The Armed Forces Casualty Assistance Readiness Enhancement System (CARES): Design for Flexibility**

**OPERATIONS RESEARCH CENTER OF EXCELLENCE  
TECHNICAL REPORT #DSE-TR-0619  
DTIC #: ADA449018**

Lead Analyst

**Major Ernest Y. Wong, M.S., M.A.**

Assistant Professor and Analyst, Operations Research Center of Excellence

Senior Investigator

**Lieutenant Colonel Simon R. Goerger, Ph.D.**

Director, Operations Research Center of Excellence

Directed by

**Lieutenant Colonel Simon R. Goerger, Ph.D.**

Director, Operations Research Center of Excellence

Approved by

**Colonel Michael L. McGinnis, Ph.D.**

Professor and Head, Department of Systems Engineering

**JUNE 2006**

**Distribution A: Approved for public release; distribution is unlimited.**

# **The Armed Forces Casualty Assistance Readiness Enhancement System (CARES): Design for Flexibility**

Lead Analyst

**Major Ernest Y. Wong, M.S., M.A.**

Assistant Professor, Operations Research Center of Excellence

Senior Investigator

**Lieutenant Colonel Simon R. Goerger, Ph.D.**

Director, Operations Research Center of Excellence

## **OPERATIONS RESEARCH CENTER OF EXCELLENCE TECHNICAL REPORT #DSE-TR-0619 DTIC #: ADA449018**

Directed by

**Lieutenant Colonel Simon R. Goerger, Ph.D.**

Director, Operations Research Center of Excellence

Approved by

**Colonel Michael L. McGinnis, Ph.D.**

Professor and Head, Department of Systems Engineering

**JUNE 2006**

The Operations Research Center of Excellence is supported by the Assistant Secretary of the Army  
(Financial Management & Comptroller)

This Research was sponsored by: The U.S. Army Casualty and Memorial Affairs Operations Center

**Distribution A: Approved for public release; distribution is unlimited.**

## **Abstract**

The families of fallen soldiers are required to complete a considerable number of forms in order to receive various benefits and entitlements from the Department of Defense, Department of Veterans Administration, Internal Revenue Service, and Social Security Administration. They must do so at a time when the families' grief is raw and normal tasks seem an unbearable burden. Active duty soldiers appointed Casualty Assistance Officers (CAOs) assist surviving families through the process. However, CAOs tend to be inexperienced, usually serving in this capacity for the first and only time, and they oftentimes find themselves challenged to provide accurate and thorough assistance. Moreover, changing laws and updated regulations regarding casualty entitlements add to the pressures and perplexities that many CAOs experience. As a consequence, some families do not receive all benefits and entitlements in a timely manner. Furthermore, in some instances potential benefits may be overlooked entirely. To help remedy these shortcomings, we have developed the Armed Forces Casualty Assistance Readiness Enhancement System (CARES)—an information system that improves how the Department of Defense cares for military families in arguably their greatest time of need.

## About the Authors

**Major Ernest Y. Wong** is an instructor with the United States Military Academy's Department of Systems Engineering at West Point, New York. He received his B.S. in Economics from USMA, M.S. in Management Science and Engineering from Stanford University, and M.A. in Education from Stanford University. As a Military Intelligence officer in the U.S. Army, he has served in a variety of military assignments around the world. He is a member of the Phi Kappa Phi, Alpha Pi Mu, and the Omega Rho honor societies. He was recently selected to attend the NASA Exploration Systems Summer Research Opportunities Fellowship at the Marshall Space Flight Center.

**LTC Simon R. Goerger**, Ph. D., is currently serving as an Assistant Professor and the Director of the Operations Research Center of Excellence in the Department of Systems Engineering at the United States Military Academy, West Point, New York. He earned his Bachelor of Science from the United States Military Academy in 1988 and his Masters in Computer Science and Doctorate in Modeling and Simulations from the Naval Postgraduate School, Monterey, CA in 1998 and 2004, respectively. His research interests include combat models, agent based modeling, human factors, and training in virtual environments. LTC Goerger has served as an infantry officer with the 6<sup>th</sup> Infantry Division in Alaska & Sinai, Egypt, as a cavalry officer with the 2<sup>d</sup> Armored Cavalry Regiment at Fort Polk, LA & Port-a-Prince, Haiti, and as a software engineer for COMBAT<sup>XXI</sup>, the US Army's future brigade and below analytical model for the 21<sup>st</sup> Century.

## **Acknowledgements**

This project was funded under the vision and leadership of Colonel Mary Torgersen, Director, U.S. Army Casualty and Memorial Affairs Operations Center. The authors would like to gratefully acknowledge the enduring impact and immense contributions that Mr. Daniel Ruiz and Captain Sonya Alexander of U.S. Army Human Resources Command have made on the direction of CARES. The authors would also like to acknowledge the following individuals for their feedback, suggestions, and recommendations for improvements on the initial test versions of CARES: Lieutenant Colonel William Bland, Major Gregory Boylan, Major Terry Barron, Major Deidre Aramanda, Major Paul Evangelista, and Ms. Gail Reynolds. The authors are indebted to Ms. Kriste McTamaney, Mr. Tom Rumble, Lieutenant Colonel Grant Dewey, and Lieutenant Colonel Bob Amico for their valued assistance and support on the project. Ms. Alexis de Raadt-St. James and Mr. Mark Hoffman's exceptional work on the Althea Foundation ([www.thealtheafoundation.org](http://www.thealtheafoundation.org)) has helped to galvanize encouragement and support for the development of CARES. We would also like to acknowledge the capstone research team of LTC Brian Sperling, CDT Caleb Wells, CDT Kevin Stramara, CDT Tom Gutierrez, and CDT Chris Tanner who performed a parallel study to help identify metrics for assessing the current state of the Casualty Assistance program laying the foundation for assessment of the impacts of AF-CARES.

## Table of Contents

<b>Abstract.....</b>	<b>iii</b>
<b>About the Authors.....</b>	<b>iv</b>
<b>Acknowledgements .....</b>	<b>v</b>
<b>Table of Contents .....</b>	<b>vi</b>
<b>Chapter 1: Introduction .....</b>	<b>7</b>
<b>Chapter 2: The SEMP Problem Solving Framework.....</b>	<b>9</b>
<b>Chapter 3: Stakeholder Analysis.....</b>	<b>11</b>
<b>Chapter 4: Redefining the Problem Statement .....</b>	<b>12</b>
<b>Chapter 5: Rapid Prototyping to Overcome Inertia .....</b>	<b>15</b>
<b>Chapter 6: Alignment of Product and Process.....</b>	<b>18</b>
<b>Chapter 7: Dynamic Alpha Testing.....</b>	<b>20</b>
<b>Chapter 8: Current Status and Path Forward.....</b>	<b>21</b>
<b>Chapter 9: Conclusions .....</b>	<b>23</b>
<b>Endnotes.....</b>	<b>25</b>
<b>Appendix A: List of Abbreviations .....</b>	<b>26</b>
<b>Appendix B: Key VBA Macros and MS Excel Coding .....</b>	<b>27</b>
<b>Appendix C: Steps in the CAO Process .....</b>	<b>30</b>
<b>Appendix D: CARES Data Fields.....</b>	<b>36</b>
<b>Appendix E: CARES Data Linkage Structure.....</b>	<b>37</b>
<b>Distribution List .....</b>	<b>38</b>
<b>REPORT DOCUMENTATION PAGE – SF298 .....</b>	<b>39</b>

## Chapter 1: Introduction

*“There is no more effective way of creating bitter enemies of the Army than by failing to do everything we can possibly do in a time of bereavement, nor is there a more effective way of making friends for the Army than by showing we are personally interested in every casualty which occurs.”*

*--General George C. Marshall*

With increased media attention on and heightened sensitivity to U.S. military casualties in Iraq and Afghanistan, the Department of Defense is making a concerted effort to enhance the way it administers and conducts the Casualty Program. While the numerous benefits and entitlements serve as a means to help ease the anguish that families must endure after the loss of a loved one serving in the armed forces, the process of applying for such assistance requires considerable patience and persistence. Moreover, because new legislation and regulations periodically change many of these entitlements—typically enacted for the benefit of surviving family members—a considerable amount of knowledge is required to accurately and thoroughly process all the requests for such benefits [1].

To help honor the sacrifice of those who have died in service to our nation, the Army appoints soldiers as Casualty Assistance Officers (CAOs) to assist surviving families and loved ones in the aftermath of their loss. These soldiers serve as representatives of the Secretary of the Army and the Army itself, and their performance as CAOs help to shape the family’s lasting impression of the Army as an institution that cares for its own. CAOs assist the eligible next of kin in making arrangements for the funeral or memorial service, settling claims, and paying survivor benefits. The length of the CAO assignment varies depending largely on the circumstances of the next of kin. Casualty assistance concludes when all the claims have been completed, payment of survivor benefits has begun to flow to the next of kin, all paperwork has

been prepared and properly filed with the appropriate agencies, and when the CAO is released of duties from the Casualty Assistance Center (CAC) overseeing the case [2].

Unfortunately, CAOs tend not to be very experienced at this somber task, usually serving in this capacity for the very first and only time. Despite ongoing efforts to improve their readiness, training, and preparedness, CAOs continue to be challenged in their ability to provide accurate and thorough assistance. Not only must they negotiate through such emotionally demanding circumstances, they must also convey a sense of authority on all matters pertaining to the benefits and entitlements process. CAOs are required to interact with numerous organizations including legal aid, the chaplain's office, finance, and retirement services. Additionally, they must help to prepare claims, benefits, and entitlements to a variety of government agencies, including the Department of Defense, Department of Veterans Administration, and Social Security Administration. Therefore, to expect CAOs to be experts at all these tasks, regardless of the amount of training they receive and the level of dedication they demonstrate, is perhaps overly optimistic.

In August 2005, the U.S. Army Casualty and Memorial Affairs Operations Center (CMAOC) contacted the Operations Research Center of Excellence in the Department of Systems Engineering at the United States Military Academy (USMA) to see if we could help introduce an electronic support system that would make it easier for CAOs to fulfill their mission. Specifically, the CMAOC requested we design a system that automates the paperwork process for claims, benefits, and entitlements related to service member casualties.

To effectively accomplish this task, however, we realized we would have to deal with a number of issues, including the on-going debate of whether or not the government could effectively implement a paperless system, what additional resources CAOs would need with such



a system, and how to best introduce such a system so CAOs could best leverage its capabilities. Additionally, it was clear to us from the start of the project that the design of the system would have to be flexible enough to account for new legislation, changing benefit amounts, and the potential obsolescence of existing forms and documents.

## Chapter 2: The SEMP Problem Solving Framework

Using the Systems Engineering and Management Process (SEMP) that we teach to cadets attending USMA—a structured problem solving process useful in the design of multidisciplinary, large-scale, and complex problems which we have graphically portrayed in Figure 1—we realized we were ultimately creating an information system that would help to improve the military’s Casualty Program [3].

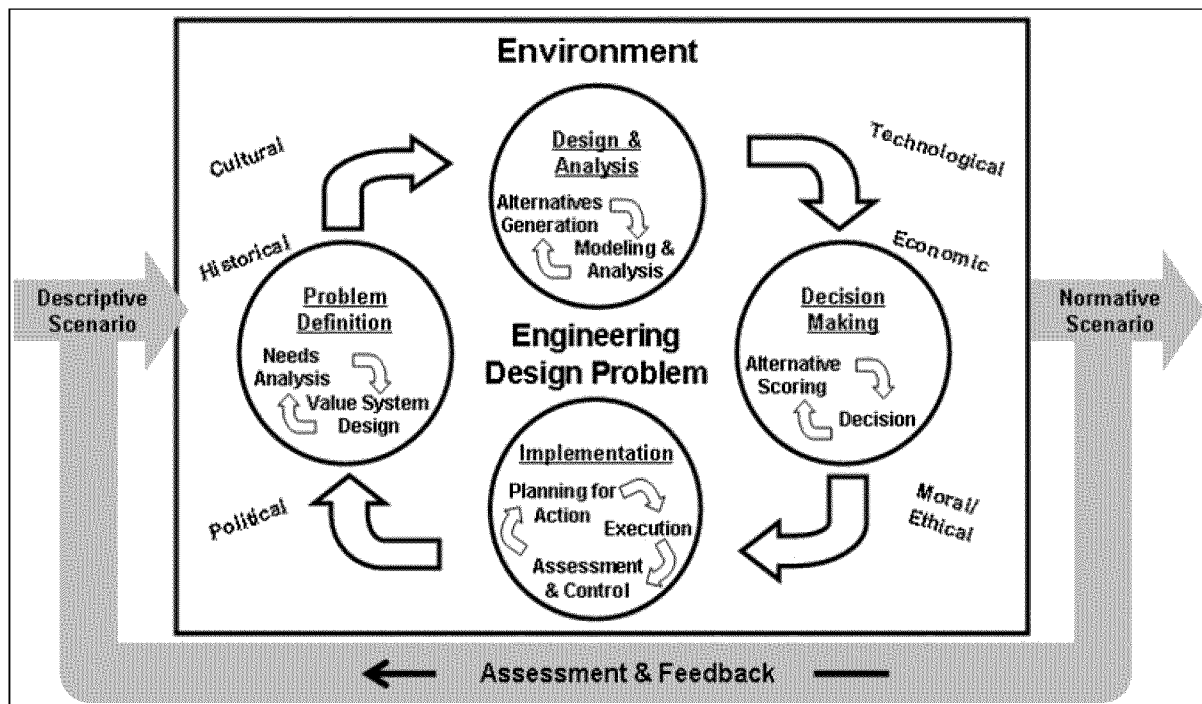


Figure 1: The SEMP Framework [4]

We also determined that rather than focusing on whether or not the government would be able to implement a coherent paperless standard, our immediate task and overriding concern was to deploy a system that CAOs could utilize as part of the existing processes and standards. Being aware that ongoing changes to the Casualty Assistance program are likely—especially with respect to amended forms, new options and benefits, and revised entitlements—we wanted to ensure the design of our system would be robust enough to accommodate periodic updates. Accordingly, we framed our approach to the project as a design for flexibility. In order to maximize the likelihood that our system would actually accomplish its intended purpose and become implemented by the U.S. Army Human Resources Command (HRC), we wanted our system to be scalable, easily modified, and simple enough for both CAOs to use and CACs to administrate.

We named our system the Armed Forces CARES—Casualty Assistance Readiness Enhancement System—Version 1.0. CARES is an information system designed to empower CAOs with the ability to perform their solemn duties much more effectively and efficiently. CARES is designed to be a user-friendly system that leverages today’s widespread use of computers, our familiarity with the internet, and our experience and skill with using Microsoft (MS) Excel and Word. While the look and feel of the system is designed to evoke that of an internet portal, CARES Version 1.0 is a MS Excel spreadsheet application that contains a considerable number of Visual Basic for Applications (VBA) macros and includes cell reference linkages to a number of MS Word forms. In short, we have designed CARES to be not only a simplistic system that helps guide CAOs through much of the bureaucratic complexities associated with the requests for claims, benefits, and entitlements, but perhaps more importantly,

we believe CARES is an accommodating tool that can be easily altered by a client host as new laws and regulations arise pertaining to the military's Casualty Program.

### **Chapter 3: Stakeholder Analysis**

“*Usability* of interactive computer systems is at the very core of the computer, communications, and information revolution, which is moving our society into the post-industrial era,” writes James Foley in a text on designing user interfaces [5]. To help ensure CARES develops into a *usable* system, we conducted a stakeholder analysis that allowed us to better scope the project requirements and gain more information and insights into the problem areas. Specifically, the stakeholder analysis enabled us to [6]:

- Leverage the opinions, recommendations, and perceptions of leaders and experts in the Casualty Program;
- Generate support from the stakeholders on the direction of the design for CARES;
- Gain the support and resources of stakeholders in helping to construct, test, and evaluate CARES;
- Foster open line of communications with stakeholders to ensure they understand the intent and goals of CARES; and
- Anticipate stakeholder reaction to CARES and progressively modify the system in a way that is most likely to gain their support and approval.

The stakeholders who comprise our system consisted not only of our client, but also of the users and potential beneficiaries of the CARES. Such stakeholders include the Department of Defense (DOD), the CMAOC, the Casualty Advisory Board (CAB), and American tax payers. Likely beneficiaries include the family of service members, soldiers assigned the responsibility

of being CAOs, CACs, and associated organizations that will have increased confidence in the military's casualty assistance system.

We interviewed stakeholders regarding current processes they used, needs and issues they perceived with the Casualty Program, and suggestions for moving forward with the CARES. These interviews help to inform the problem definition phase of the project and grounded us with better insights into how we could best design and implement CARES on behalf of HRC and CMAOC.

## **Chapter 4: Redefining the Problem Statement**

After conducting our stakeholder analysis, we were able to generate a set of criteria to help evaluate potential alternative designs and ultimately allow us to proceed with the best course of action. A hierarchical listing of the criteria from most important to least is as follows:

- Speed of implementation (how soon to field?);
- System flexibility (can it be modified to changes?);
- System reliability (does it function as intended?);
- Ease of use (does it have an intuitive interface?);
- Process transparency (does it make it clearer for the CAO and family members?); and
- Implementation costs (will it require added equipment, software, training, or infrastructure?).

These criteria helped to redefine the initial project statement we were presented to ensure we were working on addressing the correct problem.

### **4.1. Initial Problem Statement**

In an Unfinanced Requirement Statement dated 13 May 2005, HRC initiated the following request: We want a "Casualty Assistance Wizard [that] would simplify and streamline

the laborious task of completing all paperwork required when assisting surviving family members apply for all eligible benefits and entitlements from the Army, DOD, Department of Veterans' Affairs, and the Social Security Administration after losing their loved one on active duty. The wizard application would function much like TurboTax or other wizard applications in that it would access relevant personal information from [various military personnel databases] to auto-populate the family member's benefits application record, analyze that case record, and then use that analysis to ask a series of simple questions to determine automatically what benefits and entitlements the family member is eligible to receive and which forms must be completed for that purpose. The wizard should reside behind a secure web portal and include capability for digital or electronic signature and secure electronic transfer of record content to the agencies listed above. For those Casualty Assistance Officers and families without Internet access, the wizard must also be available with more limited capability in a CD or DVD format for use with a laptop computer. Once developed, a minor annual funding [is required] to maintain and update the wizard application" [7].

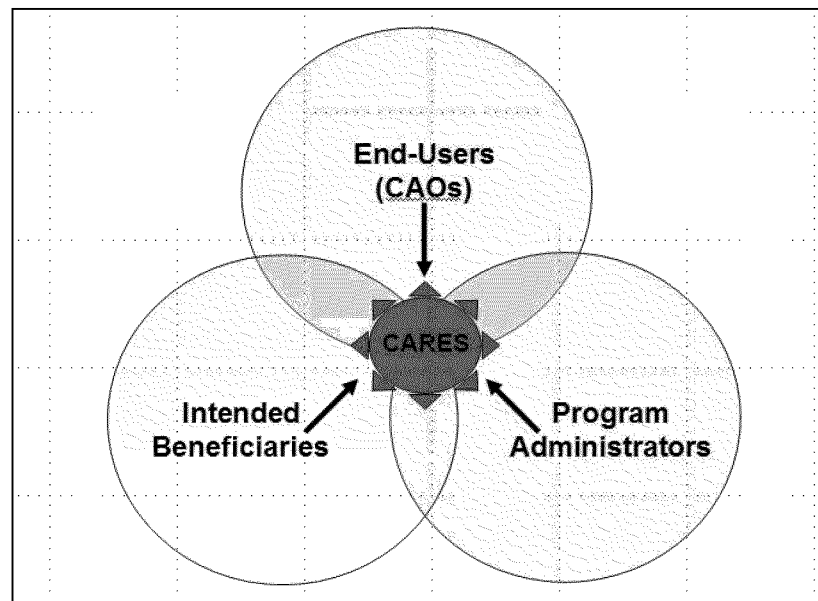
#### **4.2. Revised Problem Statement**

Based upon our stakeholder analysis and the value criteria we developed, the following revised problem statement was drafted: Our overall objective is to help to enhance the military's Casualty Program under the assumption that the Armed Forces will continue to conduct the Casualty Program in accordance with current regulations and existing paradigms (e.g., no outsourcing of functions to third parties, no major overhaul of training, and no permanent CAOs). To do so effectively, we intend to develop CARES as a tool that:

- Automates, simplifies, and streamlines the paperwork requirements for entitlements and benefits;

- Equips CAOs with the capability to provide reliable information and valued service to surviving family members, and helps educate, train, and guide CAOs in the execution of their duties;
- Contributes in providing timely, accurate, responsive, and transparent assistance to surviving family members in the trying times they must endure; and
- Provides the CMOAC and CACs with greater visibility on the progress of individual cases so that they can proactively manage and better assist CAOs for the benefit of surviving family members.

Successful implementation of this information system required we consider the needs of the three primary stakeholders within the military Casualty Program: the CAOs who are the end-users of the system, the surviving family members who are the intended beneficiaries of the system, and the casualty program administrators who have arguably the greatest influence and impact on how the system will be employed. Figure 2 shows the ideal bridging function that CARES can provide to these three primary stakeholders. Our design for the system, therefore, would have to be flexible enough to take into account the various tradeoffs generated by oftentimes competing interests and goals.



**Figure 2:** Linking Stakeholders with CARES

## Chapter 5: Rapid Prototyping to Overcome Inertia

In order to ensure our design for CARES was continually progressing in the proper direction, we decided to build the system as a rapid prototype [8]. Doing so allowed us to develop a working model that we could promptly change and refine based on the feedback and insights of our expert stakeholders. Furthermore, we believed rapid prototyping would help us to overcome much of the institutional inertia oftentimes associated with efforts to introduce change and modernize.

Early analysis on the project revealed that nearly all the data contained in a soldier's Department of Defense Form 93, Record of Emergency Data, served to provide a great deal of the information needed for automatically populating casualty benefits forms. Our initial design, therefore, consisted of a basic MS Excel spreadsheet application linked to several MS Word forms. Figure 3 shows a screenshot of one of the earliest design layouts for CARES. Much of

	A	B	C	D	E	F
1	PART 1:	CAO's Name:				own d
2		Date of CAC Barring:				from CAC
3		Create Casualty Assistance Referral Card:				Add to CAC
4		Initiate DA Form 1594 Daily Staff Journal				
5						
6		Deceased's Rank:	MAJ			
7		Deceased's Name (First, MI, Last):	Howard	D	McInvale	
8		Deceased's SSN:	dec ssn			
9		Deceased's Unit/Station:	dec unit			
10		Deceased's Date of Death:	dec date of death			
11		Deceased's Years of Service:	dec yrs of svc			
12		Deceased's Place of Death:	dec place of death			
13		Date of Internment:	2-Nov-05			
14		Place of Internment (City, State):	west point, NY			
15		Deceased's Date of Birth:	2-Nov-05	Place of Birth:	Place Birth	
16		Deceased's Branch of Service:	U.S. Army			
17	SSN:	Last Name:	First Name:	Middle Initial:	Relationship:	Citizenship
18		123 McInvale	Doug	Y	Head Honcho	USA
19	PNOB Birth	PNOB Birth Hong Kong				
20						
21						
22						
23						
24						
25						
26						
27						
28						
29	COUNTRY	NOK's Confirmed Mailing 45-day Address:				
30		Street Address (APT/BLDG)	22 Mearns Ave. Bldg 3A			
31		City	Highland Falls	State	NY	
32		Home Telephone Number	818-233-phon			
33		Work Telephone Number	818-233-phon			
34		SSN: PNOB SSN				
35						
36		NOK's Confirmed Residence 45-day Address:				
37		Street Address (APT/BLDG)	22 Mearns Ave. Bldg 3A			
38		City, State, Zip Code	22 Mearns Ave. Bldg 3A			
39						
40		Deceased's Father's Name:				
41		Deceased's Mother's Maiden Name:				
42						

Figure 3: Initial Prototype for CARES

the focus for the initial prototype was on its functionality--determining whether or not we could actually link data elements into the various forms required for casualty claims and benefits processing. Because CAOs are assigned to just one casualty at any one time, we selected Excel over Access mainly because we did not see a need for relational database functionality in CARES. Limiting privacy and security concerns over personal data also influenced our decision to choose Excel over Access.

While the initial prototype demonstrated to us and our client that we could design CARES to satisfy their requirements, we wanted to develop a more user-friendly interface for the system. Based on our belief that most of today's soldiers are familiar with the internet and web-interfaces, we decided to develop CARES as an internet service tool which would reside and be hosted on our client's existing website at HRC (<https://www.hrc.army.mil/site/Active/TAGD/CMAOC/cmaoc.htm>). We experimented with active server pages (ASP), structured query language (SQL), and visual basic (VB) in our design of the CARES website. We envisioned CAOs interacting with CARES via the internet on the front-end, while data linkages for automatically populating forms would continue to be linked between MS Excel and Word on the back-end. Figure 4 shows a screenshot of the web-based layout we designed for CARES.

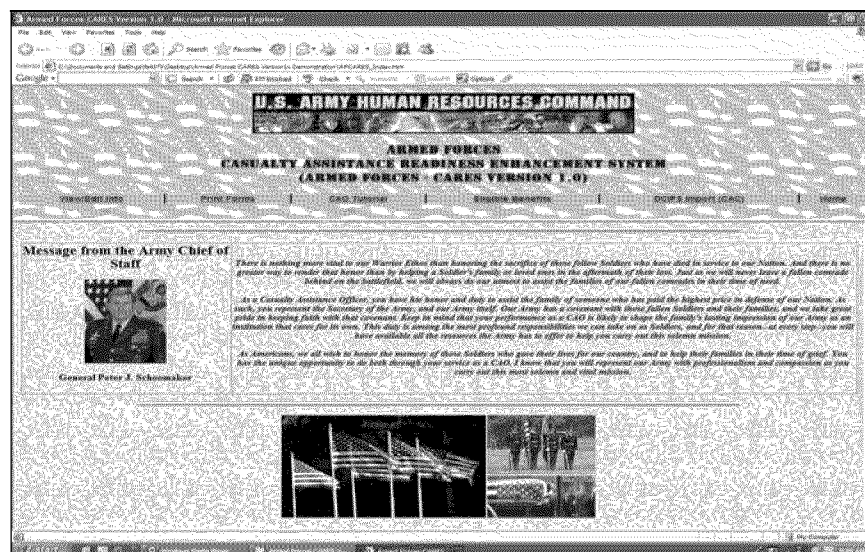


Figure 4: Web Layout Design for CARES



We eventually concluded, however, that CAOs would not have guaranteed access to the internet, especially during their time directly assisting family members. Therefore, we returned to our initial prototype and refurbished it with a web-like user interface. By combining the attributes we found most advantageous in both the initial prototype and the web portal, we were able to quickly continue on our path forward with our design for CARES. Figure 5 provides a

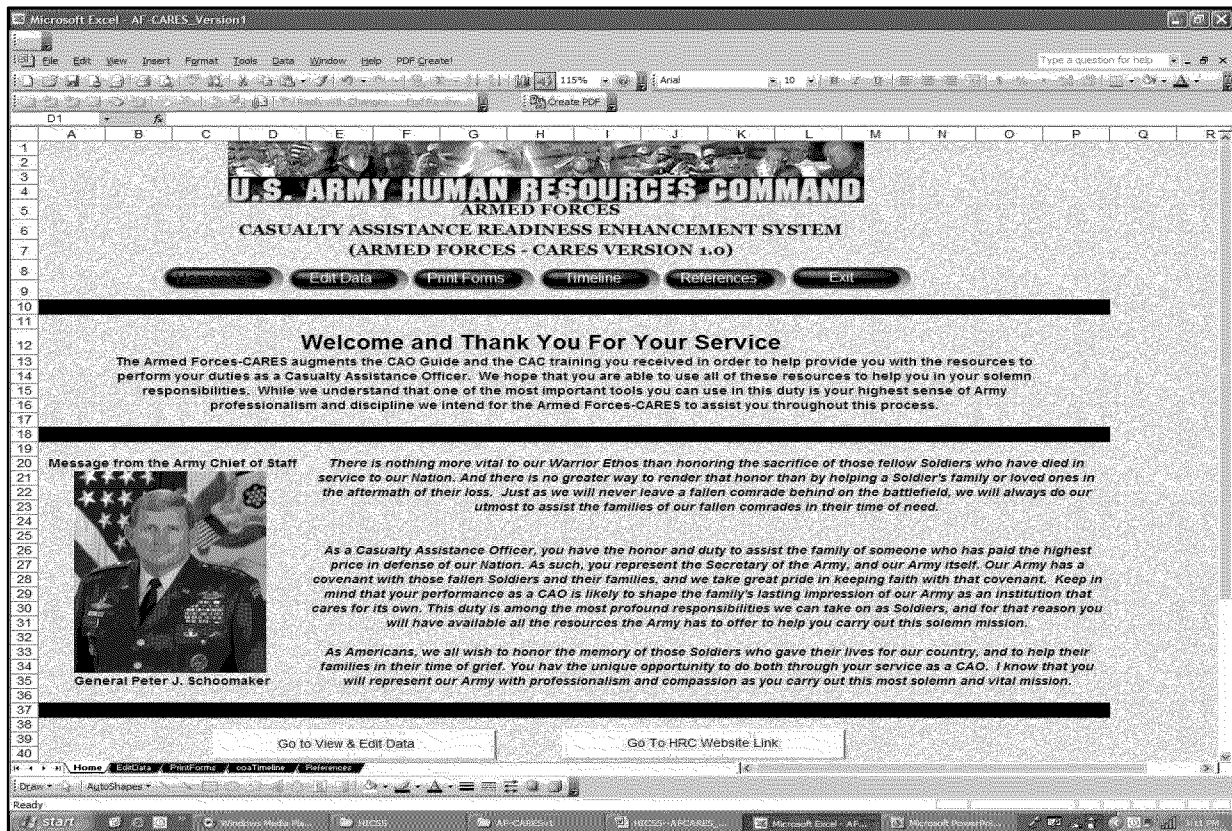


Figure 5: Screenshot of CARES Version 1.0

screenshot of the CARES Version 1.0 layout. Thus, not only did rapid prototyping help to give our key stakeholders a means to actually visualize the system as we continually improved upon it, rapid prototyping also helped to improve our own ability in communicating on how to best modify the system to ensure it would meet the needs and requirements for what we had defined in the revised problem statement. Rapid prototyping also provided the following benefits:

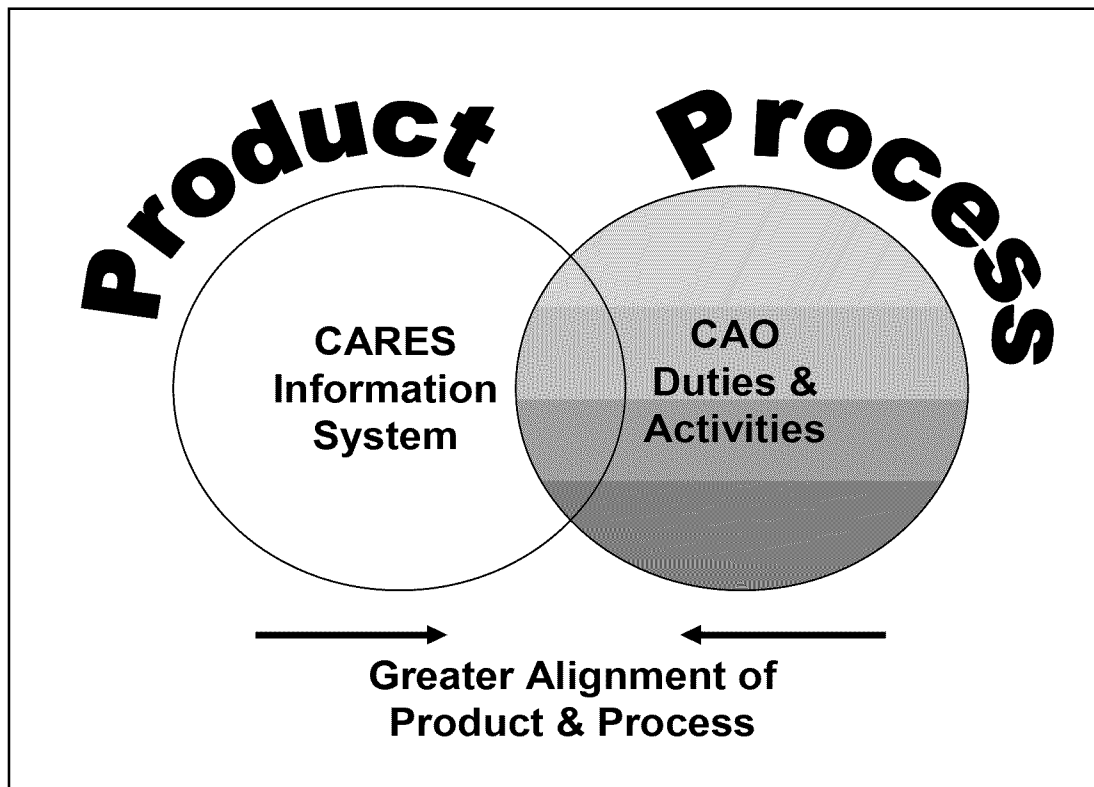
- Gave stakeholders a way to tangibly evaluate CARES;
- Empowered stakeholders with a sense that their input would actually play a critical role in the development and refinement of the system;
- Allowed us to develop the system without being deterred or fearful that it was simply a working model (imperfect by design);
- Provided us with the ability to swiftly introduce changes to the system based on stakeholder feedback;
- Offered us a fairly accurate way to gauge progress and project success;
- Presented us with the means to actually build changes into the system without being encumbered by much of the technical complexity associated with linking data elements into forms; and
- Permitted us to capitalize on and further develop those ideas that showed promise and quickly abandon those that held little potential.

## **Chapter 6:     Alignment of Product and Process**

In order for CARES to serve its purpose of being a usable information system that helps to better link CAOs, family members, and program administrators with one another and better align stakeholder interests, we realized that the system had to have the following attributes:

- Is easy to update and accommodate changes;
- Is intuitive to use;
- Is portable;
- Does not require unique resources;
- Does not require a great deal of additional training;
- Gives CAOs the power to override data errors maintained within government electronic records;
- Gives both CAOs and family members a more detailed explanation of their various options;
- Gives CMAOC and CACs near real-time visibility on the progress of individual cases; and
- Automates the burdensome process of filling out casualty claims and benefits forms.

While some of these attributes are at odds with one another and tradeoffs are apparent, we realized we would need to implement a balanced approach in our design of CARES—one that simultaneously satisfies the needs of CAOs, family members, and program administrators. Deborah Hix and H. R. Hartson advise, “Ensuring usability in an interface requires attention to two main components: the product and the process by which the product is developed” [9]. For this project, CARES and the data stored within it represent the product; and the activities associated with the military’s Casualty Program represent the process. Linking the two together in a harmonious and synergistic manner was one of our key goals. Figure 6 illustrates our goal of attempting to balance and create greater synergy between the system itself and the functions required to ensure the system would be useful.



**Figure 6:** Alignment of Product and Process

The need to demonstrate to various stakeholders that a better alignment of product and process would help ensure greater success for the entire Casualty Program was another critical objective in our design of CARES. Accordingly, we realized we could generate greater enthusiasm for the project if we could show that the benefits of CARES outweighed the costs associated with it—costs which include the time needed to develop, test, evaluate, and implement the system.

## **Chapter 7: Dynamic Alpha Testing**

Consistent with our approach to rapid prototyping and design for flexibility, we conducted our initial user testing on CARES in a dynamic fashion. Like most traditional alpha tests, we solicited feedback primarily from members of our Systems Engineering Department. However, unlike many typical alpha tests, we staggered our test releases instead of soliciting user input all at once and from a single version of our prototype. This not only allowed us to continuously modify the program based on user feedback, but more importantly, dynamic alpha testing provided our testers with the most up-to-date version of the prototype. Additional benefits of conducting alpha testing in this manner include:

- Allowing testers to concentrate on their areas of expertise (e.g., design layout, human-computer interface, data linkages, and casualty assistance functions) and leveraging their focused feedback;
- Not putting undue pressure on alpha testers to meet an arbitrary short deadline or suspense—instead, permitting them greater flexibility in their own timetable for progressively providing their feedback; and
- Giving system developers more time to react to constructive feedback and comments, thereby improving the prospects for an even better version of the program in its subsequent release.

## Chapter 8: Current Status and Path Forward

As of this writing, CARES Version 1.0 Beta is undergoing testing by the CMAOC, various CACs, and a select number of CAOs. There are 38 potential claims and benefits forms that CARES currently helps to automatically populate. A series of questions in the program prompt CAOs into identifying which of these 38 forms are required for their particular circumstances. Figure 7 shows a small section of CARES that helps CAOs determine which

SELECT YES or NO:	REQUIRED?	LINK TO PRE-FILLED FORMS:
<input type="checkbox"/> NO As the CAO, do you wish to use a Daily Staff Journal?	No	DA Form 1594 Daily Staff Journal or Duty Officer Log
	YES	CAO AAR & Timeline Electronic Casualty Assistance Officer AAR & Timeline
	YES	DD Form 397 Claim Certification and Voucher for Death Gratuity Payment
	YES	DA Form 7302 Disposition of Remains Statement
<input type="checkbox"/> NO Are there only partial remains of the deceased service member?	No	CJMB Form 1 Disposition of Partial Remains Election Statement
	YES	DD Form 1375 Request for Payment Funeral and/or Interment Expenses
<input checked="" type="checkbox"/> YES Does PNOK request a standard government headstone or marker?	YES	VA Form 40-1330 Application for Standard Government Headstone or Marker for installation in
	YES	DD Form 1351-2 Travel Voucher for PNOK
The deceased service member is a citizen of: <u>USA</u>		Form N-644 Application for Posthumous Citizenship
<input type="checkbox"/> Form N-644 is not required.	YES	DA Form 4475-R Data Required by the Privacy Act of 1974--Personal Information from the NC
	YES	Authorization Form Authorization For Release Form
<input type="checkbox"/> NO Did service member die while engaged in Operation Iraqi Freedom?	No	Memo Dated 23JUN03 Letter from CMAOC Director (OIF)
<input type="checkbox"/> NO Did service member die while engaged in Operation Enduring Freedom?	No	Memo Dated 23JUN03 Letter from CMAOC Director (OEF)

**Figure 7: CARES Helps to Ascertain Required Benefits and Claims Forms**

forms are required and links them to pre-filled forms customized with data pertaining to their case. Additionally, an electronic logbook helps CAOs keep track of their activities and required actions, which can also be periodically e-mailed to CACs so that there is improved situation awareness on the status of individual cases. Figure 8 shows how CARES permits CAOs to keep

[illegible]

CARES Version 1.0 merely facilitates the paper-driven process that is currently in place. Once accepted and approved by receiving agencies (e.g. the Internal Review Service (IRS), the Social Security Administration (SSA), the Department of Veterans Affairs (DVA), etc.), a subsequent version of the program incorporating digital signatures will help expedite a shift to a paperless paradigm. Fortunately, the flexible design that we have adopted for CARES ought to make such advancements in the system come to fruition much more quickly.

## **Chapter 9: Conclusions**

Economists define Pareto efficiency as the “market condition whereby resources are allocated in a way that maximizes the net benefit attained through their use” [10]. When Pareto efficiency is not attained, market failure occurs. To help create better allocative efficiency for the military’s casualty assistance program, we have developed the Armed Forces-CARES. We believe CARES will help to generate improved effectiveness for soldiers performing duties as CAOs, provided increased transparencies of the military’s casualty assistance process for surviving family members, and give greater managerial responsiveness to CACs overseeing this extremely sensitive and important responsibility. According to Foley, “The means of production is less and less the sweat of our brow, or the leveraging of our muscle power with steam or water or electric power, or mindless repetition of work on the assembly line. Rather, the means of production increasingly is the leveraging of our intellectual power with computers” [10]. It is our belief that the work on this project and the development of the Armed Forces-CARES is a way to leverage information technology to enhance the military’s Casualty Program. We also believe our work on this project is helping to advance the tenets of Army Transformation. As former Army Chief of Staff General Eric Shinseki and former Army Secretary Thomas White

have stated: “Soldiers on point for the nation transforming this, the most respected army in the world, into a strategically responsive force that is dominant across the full spectrum of operations . . . The Army’s Vision [consists of] People, Readiness, Transformation—and our efforts to change quickly into a more responsive, deployable, agile, versatile, lethal, survivable, and sustainable force” [11]. Our hope is that CARES will expand and be embraced for use throughout the Department of Defense. The flexible design that we have incorporated into CARES nicely suits the particular needs of each of the individual service components—Army, Air Force, Coast Guard, Marines, and Navy—and allows future developers to modify it in accordance with new legislation and regulations. We believe that both our approach in the design of CARES as well as the use of CARES itself in the Casualty Program will serve as key enablers in helping to further advance our military towards the fulfillment of its vision in this 21<sup>st</sup> Century.



## Endnotes

- [1] Headquarters, Department of the Army, *Army Regulation 600-8-1, Army Casualty Program*, Washington, DC, April 7, 2006.
- [2] U.S. Army Casualty and Memorial Affairs Operations Center, *Casualty Assistance Officer Guide—What You Should Know and Do to Fulfill Your CAO Duties*, 2<sup>nd</sup> Ed., U.S. Army Human Resources Command, Alexandria, VA, July 2005, pp. 6-7.
- [3] United States Military Academy, Department of Systems Engineering (Eds.), *Readings for Systems Engineering & Engineering Management*, Thomas Custom Publishing, Mason, OH, 2004, p. 2.
- [4] Ibid.
- [5] J. Foley, forward to D. Hix and H.R. Hartson, *Developing User Interfaces: Ensuring Usability Through Product & Process*, John Wiley & Sons, Inc., New York, NY, 1993, p. v.
- [6] R. Manktelow, “Stockholder Analysis and Stakeholder Management—Winning Support for your Projects,” *Mind Tools Website*, accessed April 4, 2006 at [www.mindtools.com/pages/article/newPPM\\_07.htm](http://www.mindtools.com/pages/article/newPPM_07.htm).
- [7] U.S. Army Human Resources Command, “Unfinanced Requirement (UFR)—Casualty Assistance Wizard for Survivor Benefits,” dated 13 May 2005, Alexandria, VA.
- [8] S. Isensee. *The Art of Rapid Prototyping*, London: International Thomson Computer Press, 1995.
- [9] D. Hix and H.R. Hartson, *Developing User Interfaces: Ensuring Usability Through Product & Process*, New York: John Wiley & Sons, Inc., 1993, p. xvii.
- [10] Wikipedia, “Allocative efficiency,” accessed June 25, 2006 at [http://en.wikipedia.org/wiki/Allocative\\_efficiency](http://en.wikipedia.org/wiki/Allocative_efficiency).
- [11] J. Foley, p. v.
- [12] E. Shinseki and T. White. “The 2003 United States Army Posture Statement,” letter dated February 11, 2003, accessed April 3, 2006 at [www.army.mil/aps/2003/letter/index.html](http://www.army.mil/aps/2003/letter/index.html).

## Appendix A: List of Abbreviations

<b>A</b>	
AR	Army Regulation
ASP	Active Server Pages
<b>C</b>	
CAB	Casualty Advisory Board
CAC	Casualty Assistance Center
CAO	Casualty Assistance Officer
CARES	Casualty Assistance Readiness Enhancement System
CMAOC	Civil and Memorial Affairs Operations Center
<b>D</b>	
DA	Department of the Army
DD	Department of Defense
DOD	Department of Defense
DVA	Department of Veterans Affairs
<b>H</b>	
HRC	U.S. Army Human Resources Command
<b>I</b>	
IRS	Internal Revenue Service
<b>M</b>	
MS	Microsoft
<b>O</b>	
ORCEN	Operations Research Center of Excellence
<b>S</b>	
SEMP	Systems Engineering and Management Process
SF	Special Form
SQL	Structured Query Language
SSA	Social Security Administration
<b>U</b>	
USMA	United States Military Academy
<b>V</b>	
VB	Visual Basic
VBA	Visual Basic for Applications

\*This table is sorted alphabetically

## **Appendix B: Key VBA Macros and MS Excel Coding**

The following list provides coding for most of the key VBA macros built into Armed Forces-CARES Version 1.0:

### **Auto Run**

Making your macros run automatically when opening your workbook. You can either use the Auto Open method or the Workbook Open method. These macros will display the message "Hello" when you open the workbook:

```
Sub Auto_Open()  
Msgbox "Hello"  
End Sub
```

### **Emailing Workbook**

To email your current workbook the following code:

```
Sub Email()  
ActiveWorkbook.SendMail recipients:="name@server.com"  
End Sub
```

### **Going to the 1st Sheet**

You can select the first sheet of the workbook without knowing the name of the sheet by referring to it by the index:

```
Sub FirstSheet()  
Sheets(1).Select  
End Sub
```

### **Hiding Sheets**

To hide your worksheet from users you can use the following code:

```
Sub HideSheet()  
Sheet1.Visible = xlSheetVeryHidden  
End Sub
```

### **Protecting / Unprotecting a sheet**

The macros below will protect/unprotect the current worksheet with a password:

```
Sub ProtectSheet()  
Dim Password 'This line of code is optional  
Password = "1234"  
ActiveSheet.Protect Password, True, True, True  
End Sub
```

```

Sub UnProtectSheet()
Password = "1234"
ActiveSheet.Unprotect Password
End Sub

```

### **Saving a file**

There are times you may want a macro to save a file automatically after running a macro. The second macro will save the file with a name called "MyFile". You may specify the path if you need to:

```

Sub Save()
ActiveWorkbook.Save
End Sub

```

```

Sub SaveName()
ActiveWorkbook.SaveAs Filename:="C:\MyFile.xls"
End Sub

```

### **Saving a file then exit**

To save the workbook and then exit MS Excel:

```

Sub Macro1()
ActiveCell.FormulaR1C1 = "This example worked!"
Application.OnTime Now + TimeValue("00:00:05"), "Save_Exit"
End Sub

```

```

Sub Save_Exit()
Application.Quit
ThisWorkbook.Close SaveChanges:=True
End Sub

```

### **Top of the screen**

To make the activecell be at the top of the screen & to the left on the screen try this:

```

Sub TopLeft()
ActiveCell.Select
With ActiveWindow
.ScrollColumn = ActiveCell.Column
.ScrollRow = ActiveCell.Row
End With
End Sub

```

### **vbYesNo**

There are times you may want users to click Yes or No. Just insert this line of code. Here the Select Case statement is used:

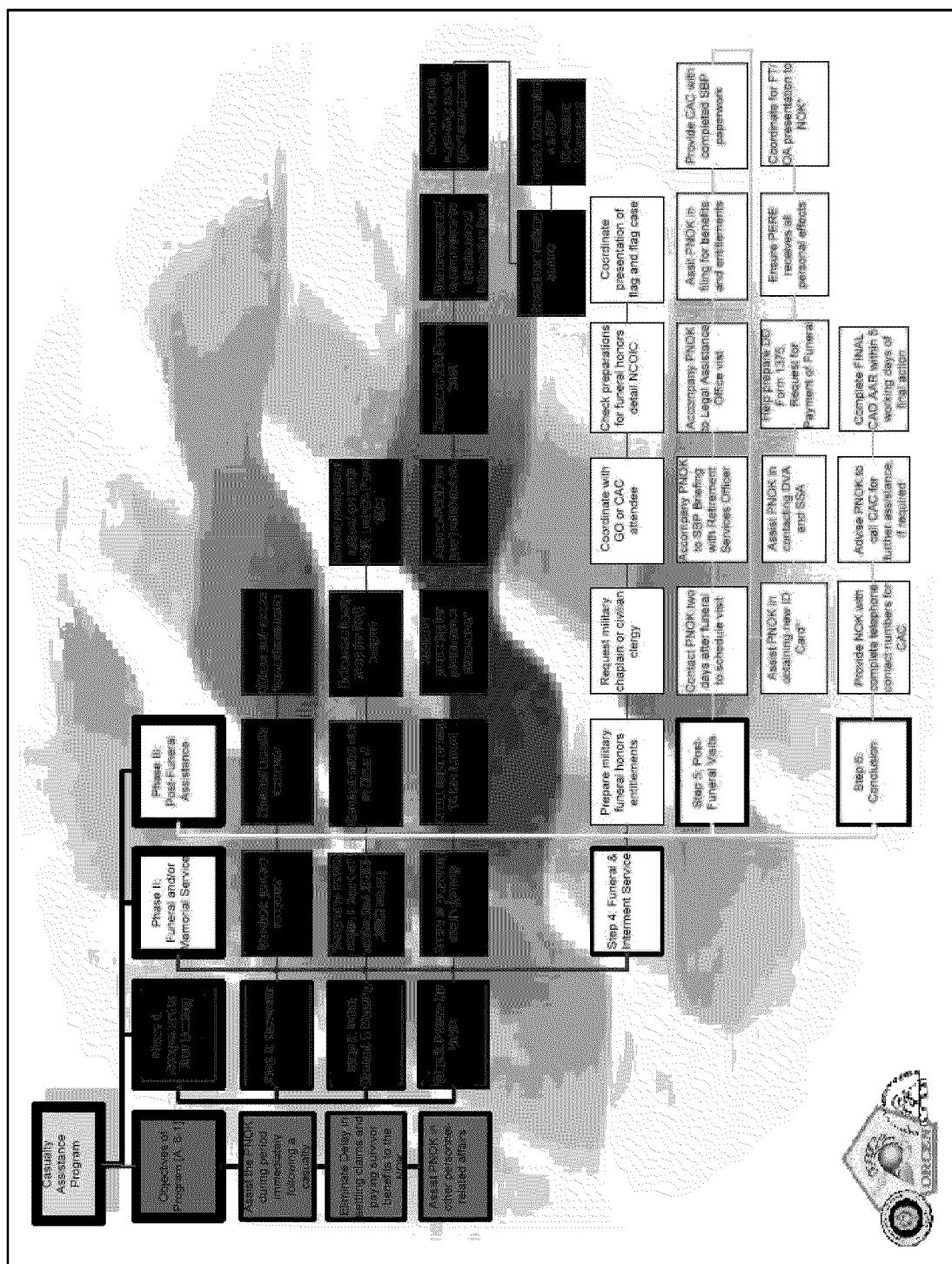
```
YesNo = MsgBox("This macro will ... Do you want to continue?", vbYesNo + vbCritical,  
"Caution")  
Select Case YesNo  
Case vbYes  
'Insert your code here if Yes is clicked  
Case vbNo  
'Insert your code here if No is clicked  
End Select
```

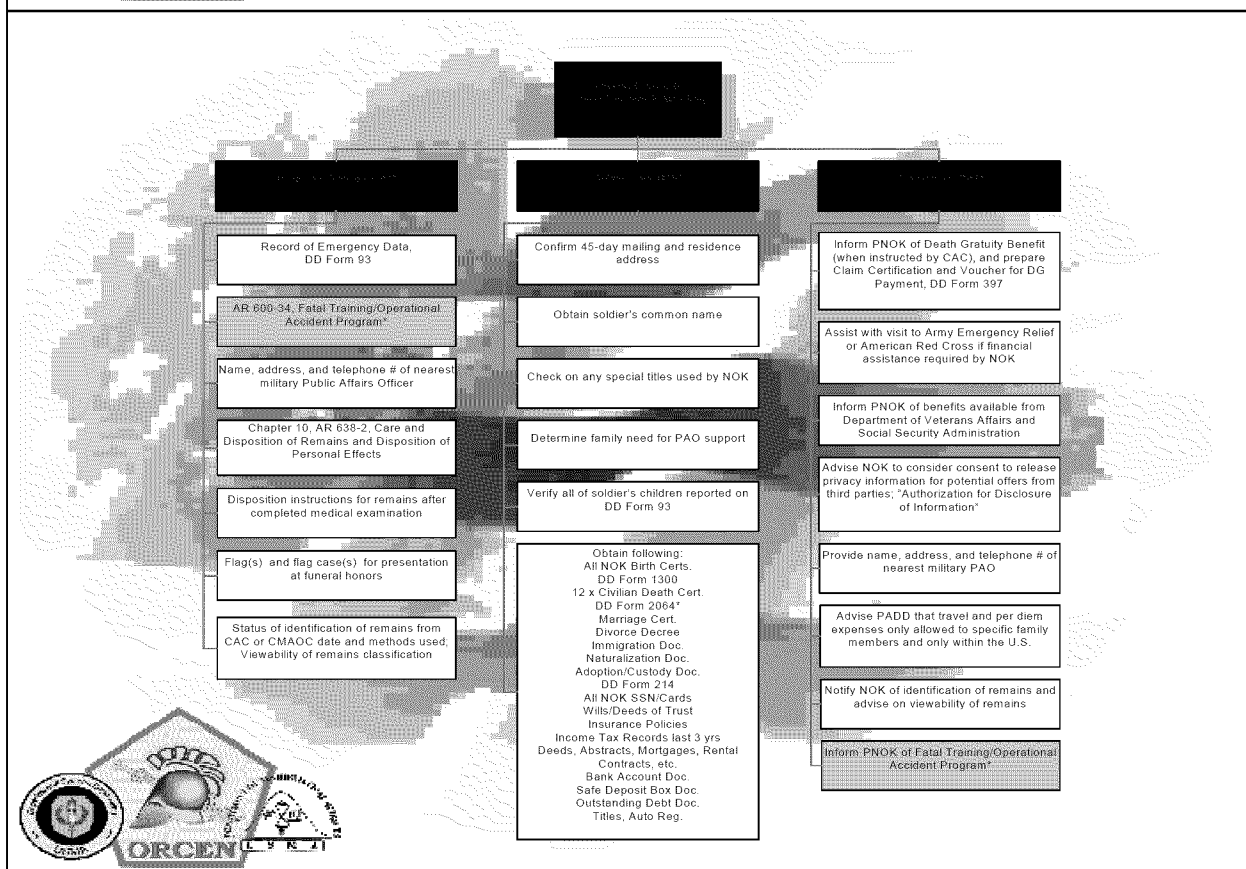
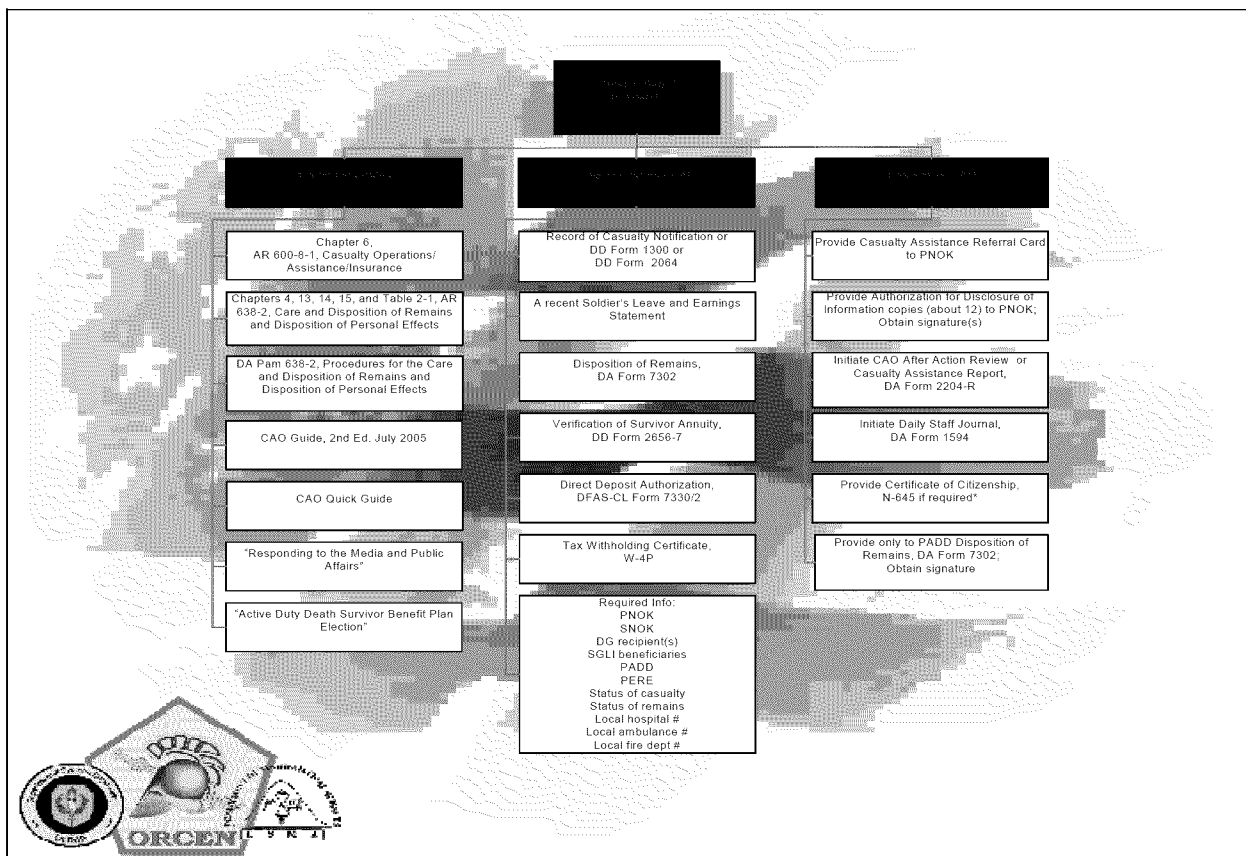
*Note: Most of the coding for these VBA macros were extracted from the following websites:*

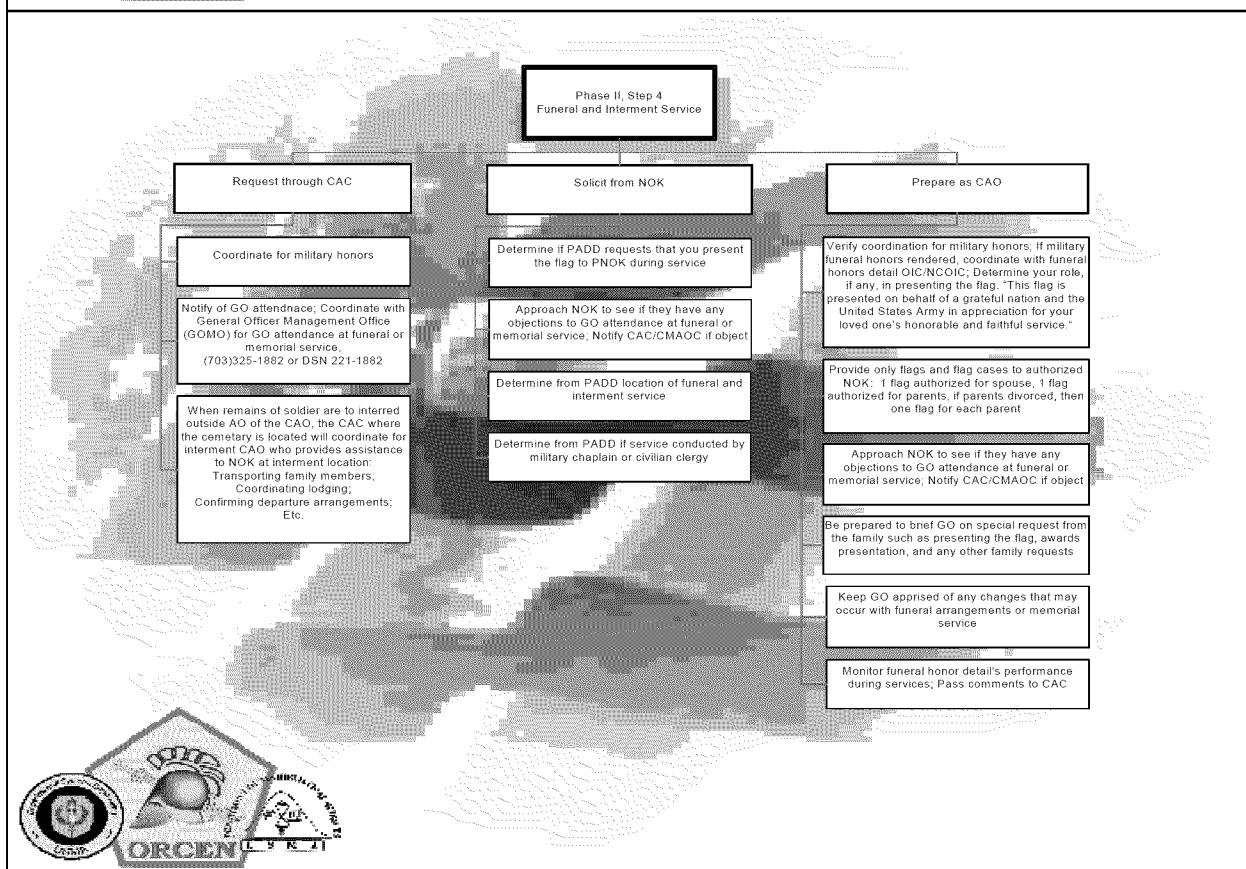
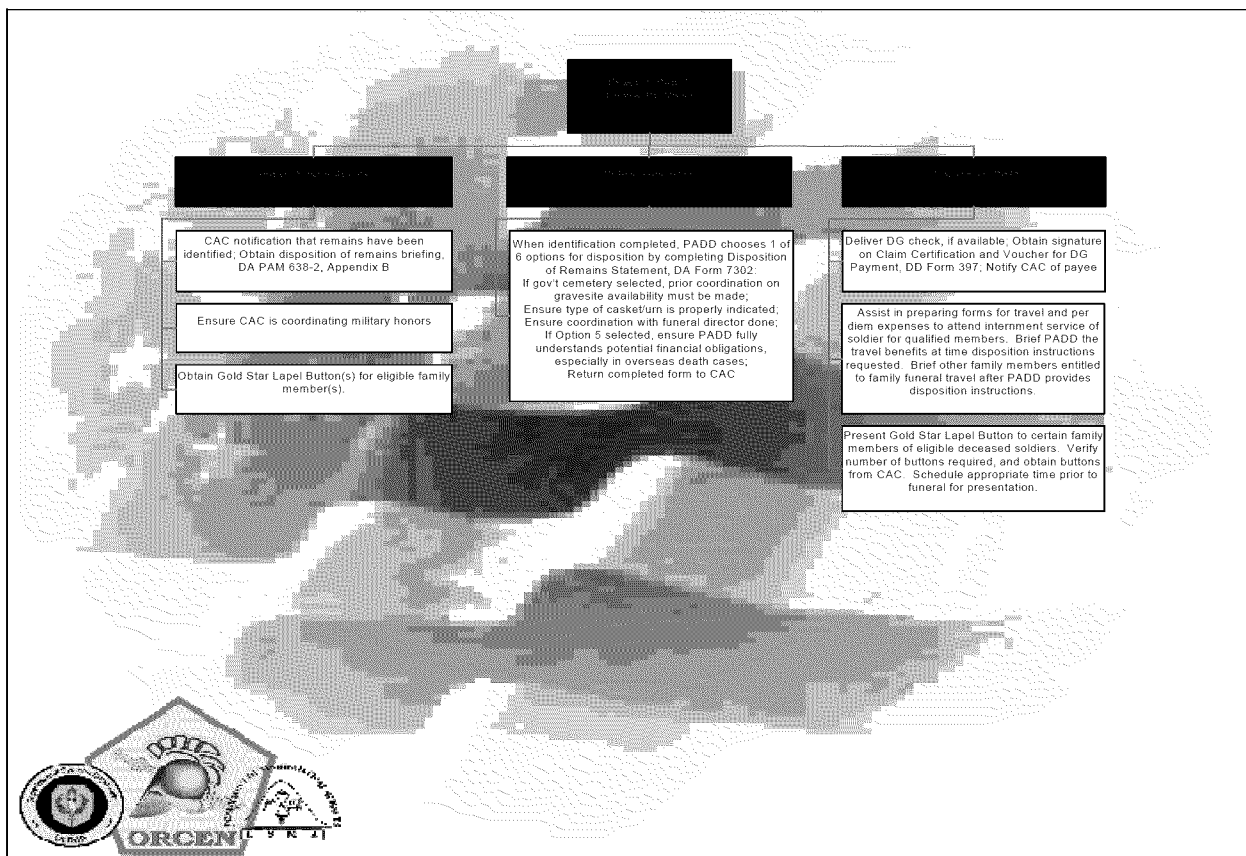
[http://www.angelfire.com/biz7/julian\\_s/julian/julians\\_macros.htm](http://www.angelfire.com/biz7/julian_s/julian/julians_macros.htm)  
<http://www.office-addins.com/-excel-addins/vba-macro-examples.html>  
<http://www.exceluser.com/help/vba/long004.htm>  
<http://www.meadinkent.co.uk/xlnavig.htm>

## Appendix C: Steps in the CAO Process

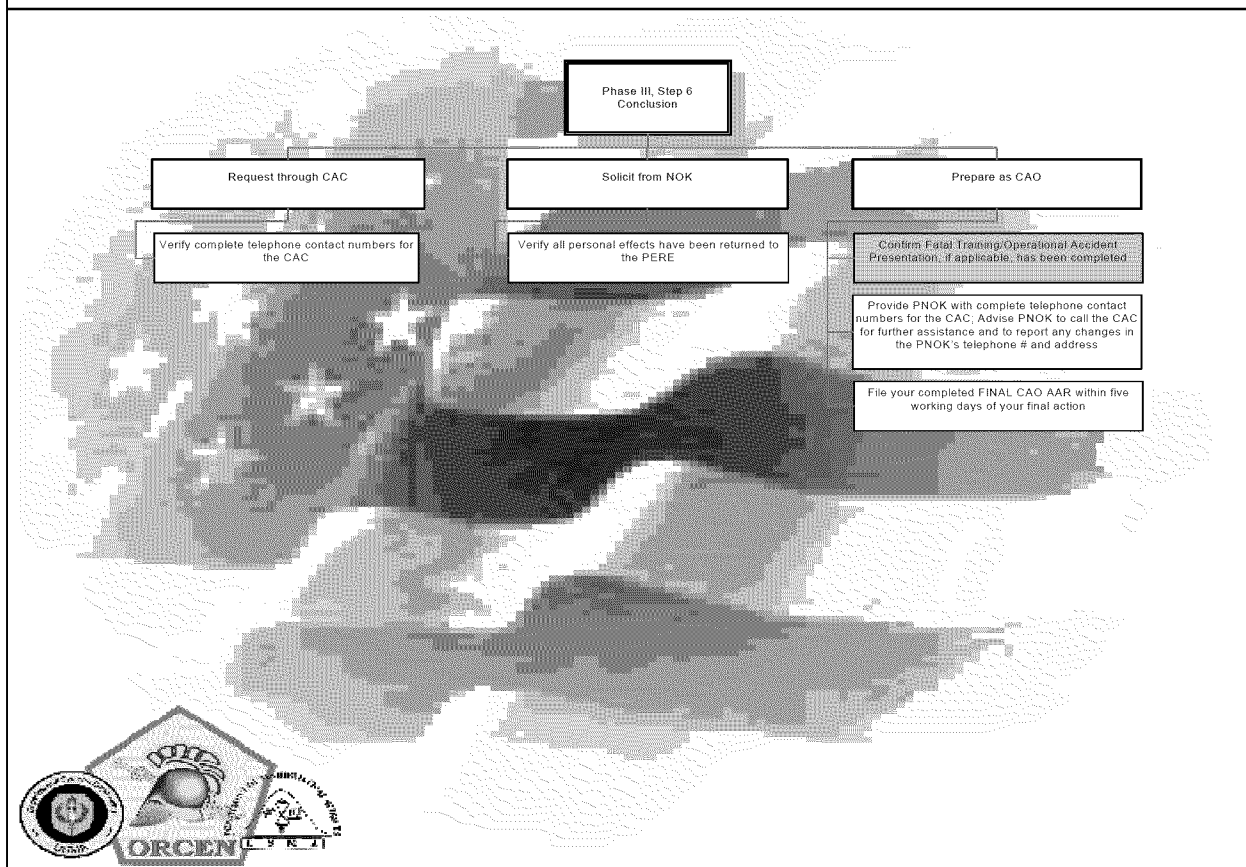
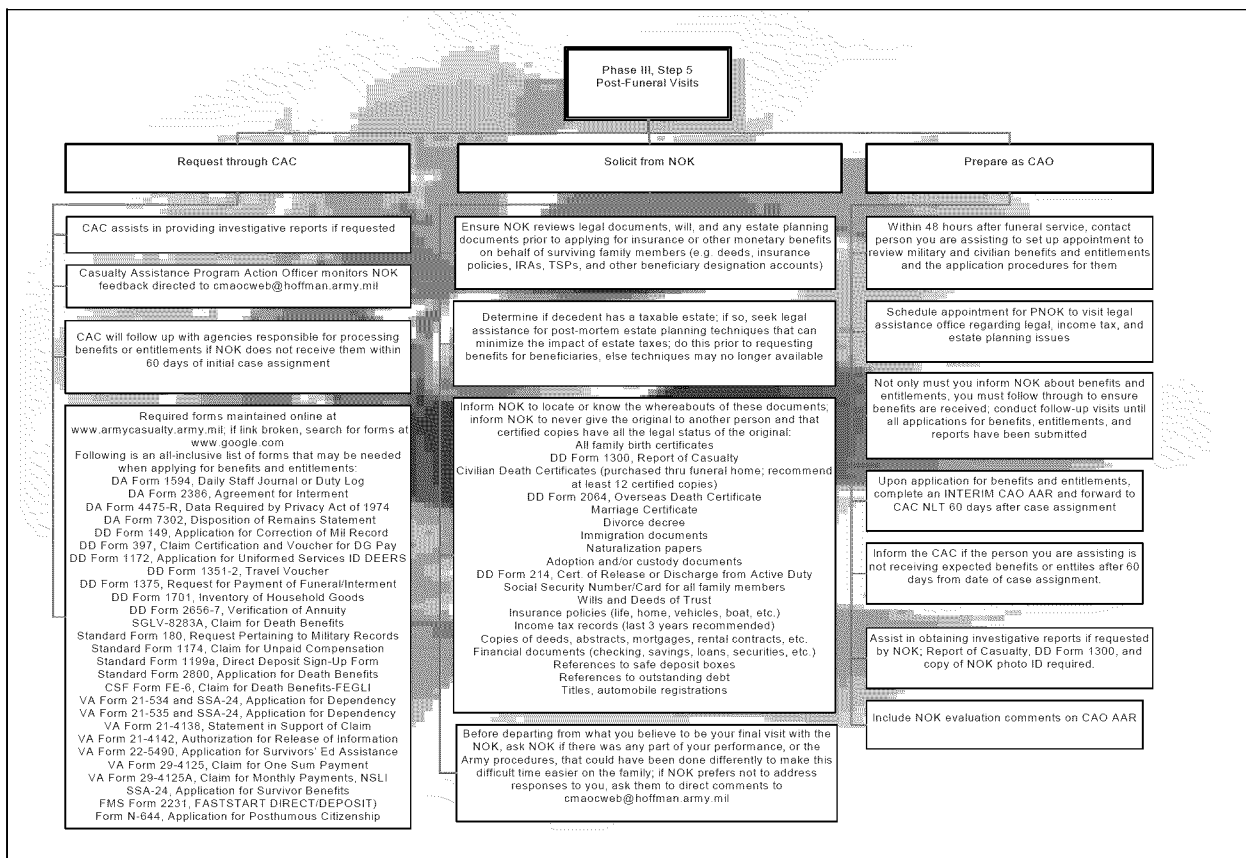
Derived from the CMAOC's *CAO Guide*, 2<sup>nd</sup> Ed., dated July 2005, the following flow charts detail the steps in the CAO process:

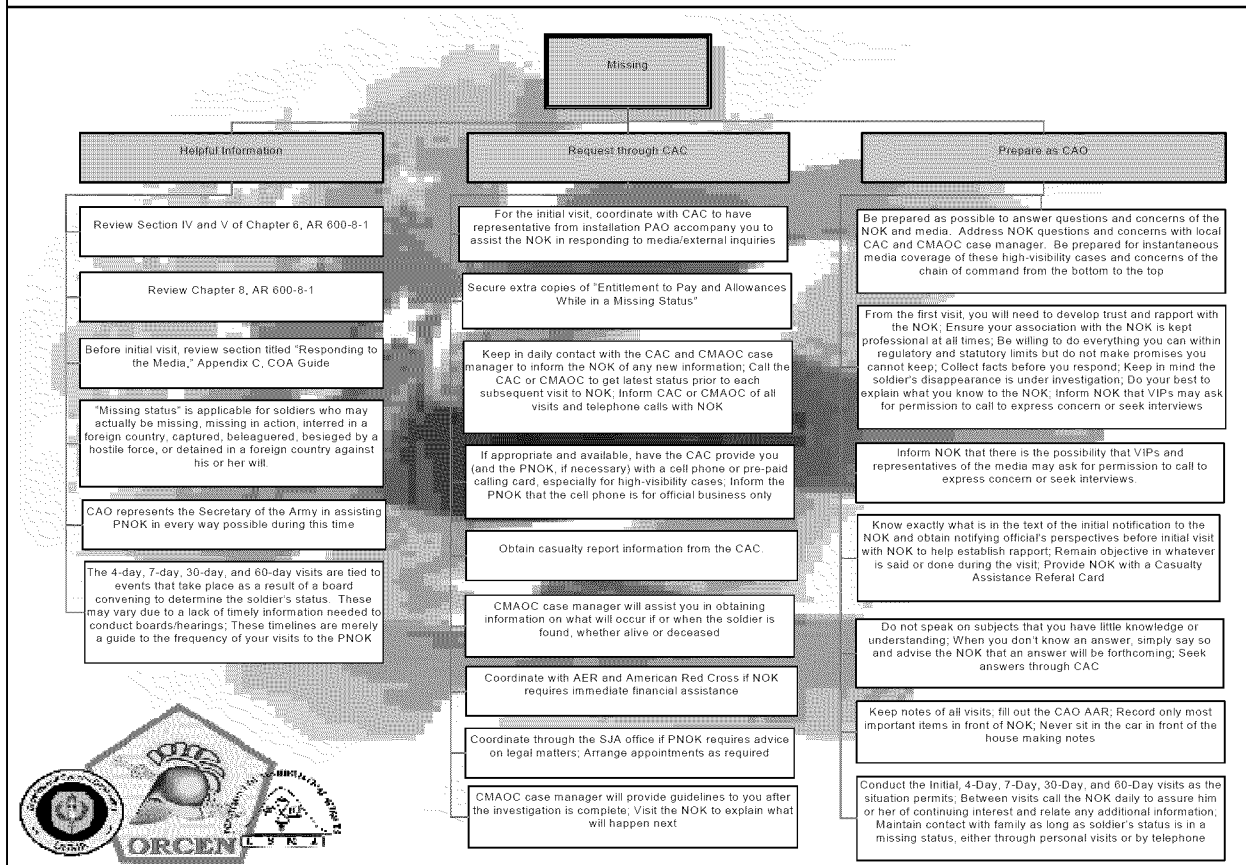
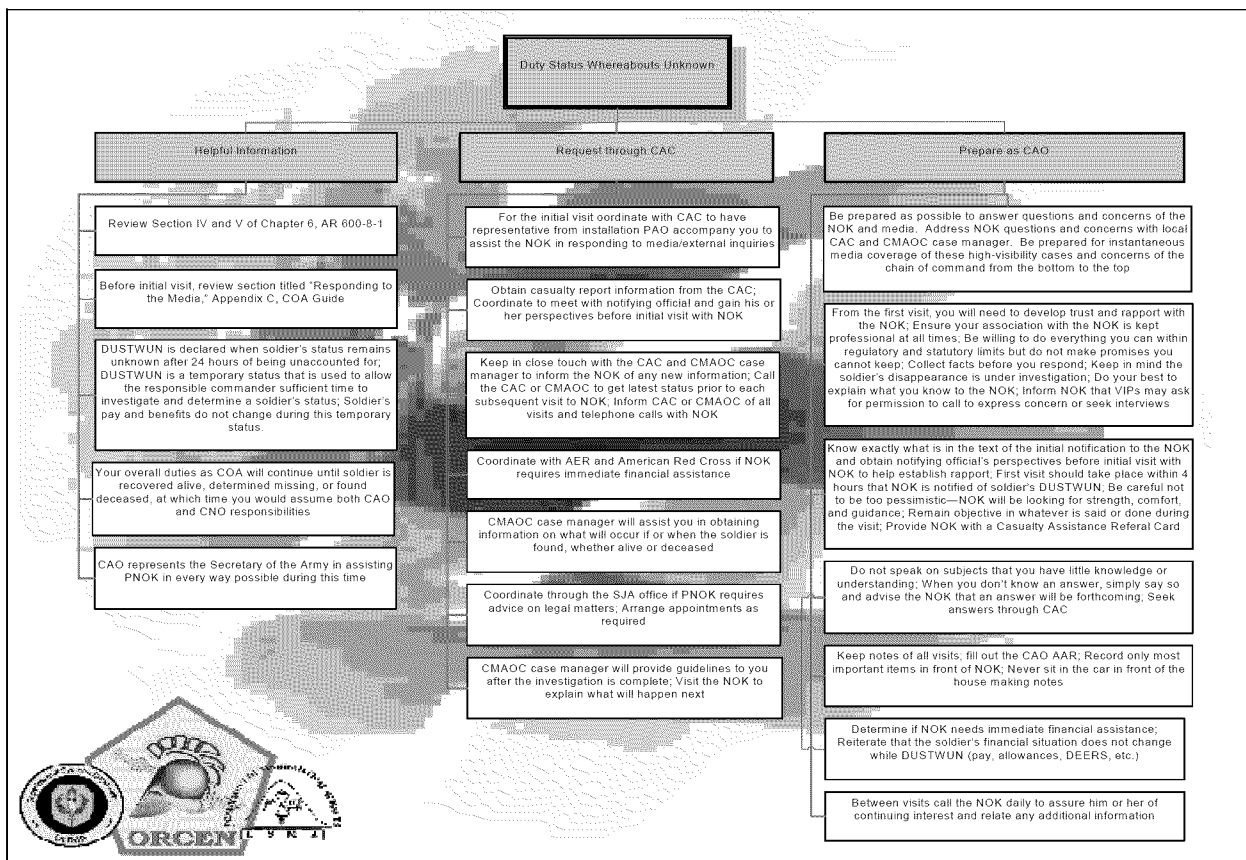


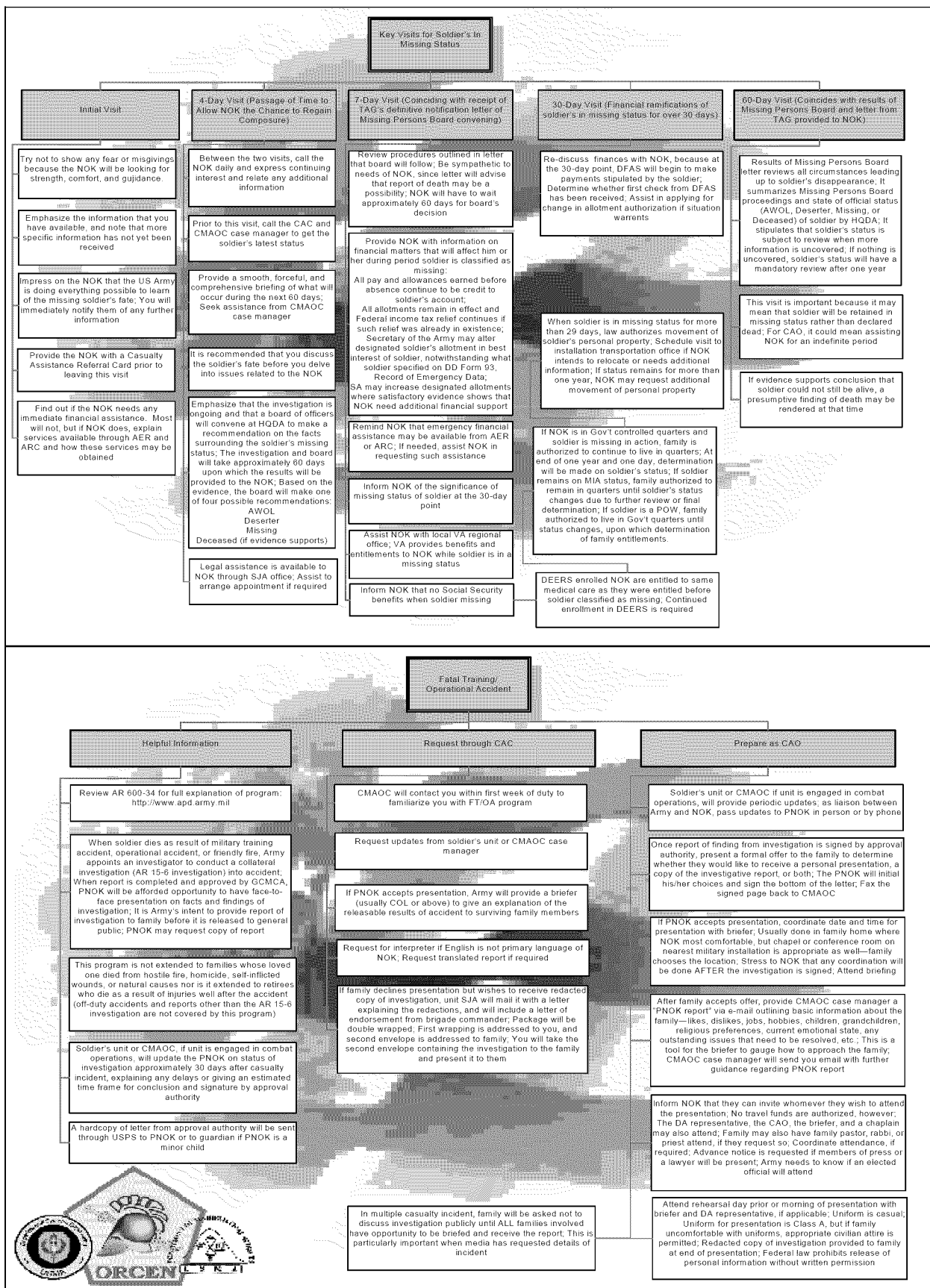










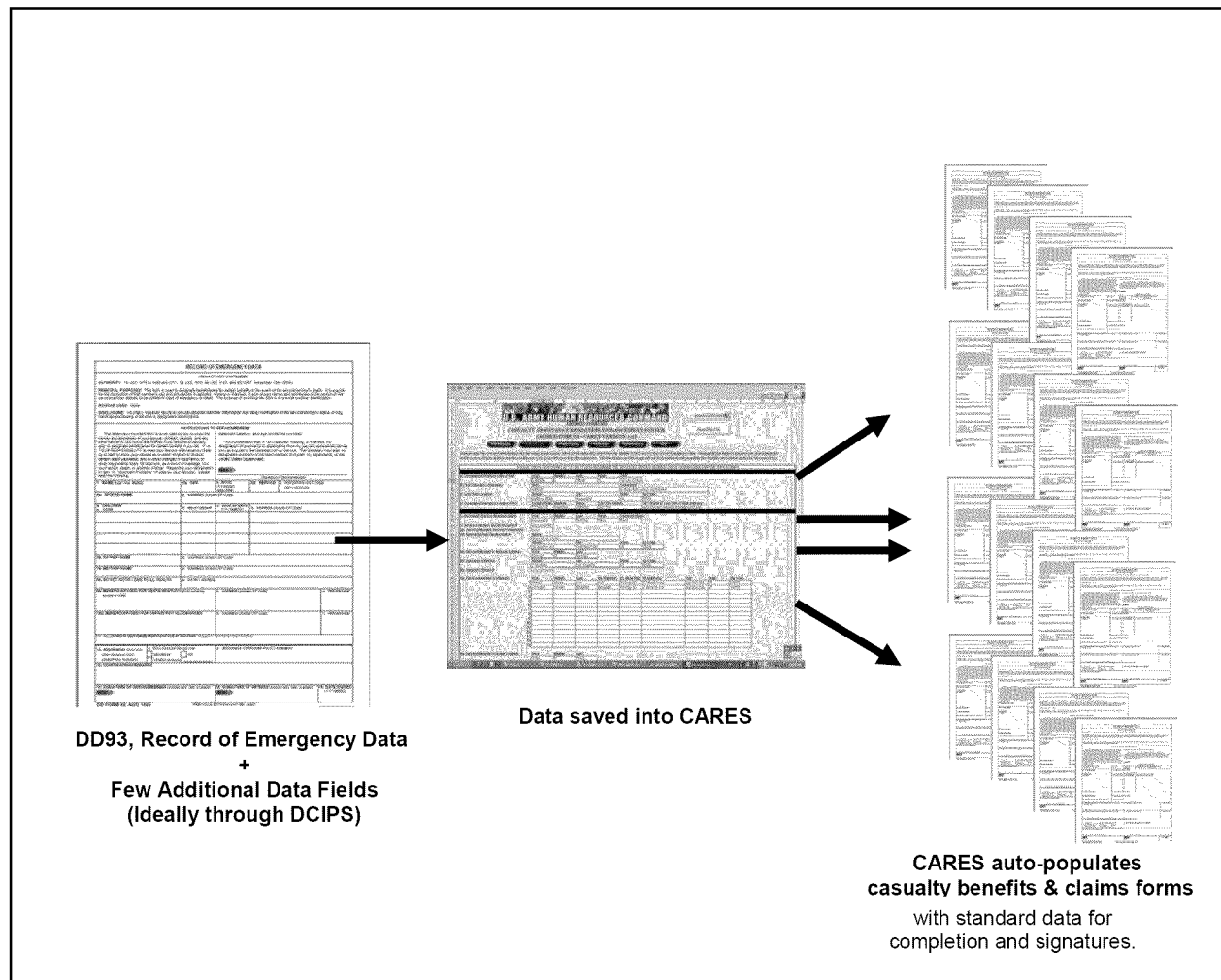


## Appendix D: CARES Data Fields

<b>A. Casualty Assistance Officer Info</b>		First	Middle	Last	Rank	SSN
<b>B. CAO Unit and Command</b>		Unit		Command		
<b>C. CAO Unit Location</b>		Street		City	State	Zip Code
<b>D. Casualty Assistance Center (CAC)</b>		Contact Date	Method	Place	CAC POC Name	CAC Phone # CAC POC E-Mail Address
<b>a. Service Member Country of Citizenship</b>				PEBD: <input type="text"/>		BASD: <input type="text"/>
<b>b. Service Member's Years of Service</b>						
<b>d. Service Member's Place of Birth</b>		City	State		Country	
<b>e. Service Member's Date of Birth</b>						
<b>f. Service Member's Place of Death</b>		City	State		Country	
<b>g. Service Member's Date of Death</b>						
<b>h. Service Member's Duty Station</b>		Unit Name	City		State	Zip Code
<b>i. Service Member's Date of Interment</b>						
<b>j. Service Member's Place of Interment</b>		Street	City		State	Zip Code Country
<b>i. Primary Next of Kin</b>		First	Middle	Last	Relationship	SSN Citizenship
<b>ii. PNOK's Date of Birth</b>						
<b>iii. PNOK's Place of Birth</b>		City	State		Country	
<b>iv. PNOK's Confirmed Mailing Address</b>		Street	City		State	Zip Code
<b>v. PNOK's Confirmed Residence</b>		Street	City		State	Zip Code
<b>vi. PNOK's Home Phone #</b>						
<b>vii. PNOK's Work Phone #</b>						
<b>1. Deceased Service Member Name</b>		First	Middle	Last	Rank	Common Name
<b>2. Service Member Social Security #</b>						
<b>3a. Service Member Service Component</b>						
<b>3b. Reporting Duty Station Name</b>		Name				
		Street City State Zip Code				
<b>4a. Service Member's Spouse's Name</b>		First	Middle	Last		
<b>4b. Spouse's Address</b>		Street	City		State	Zip Code
<b>4c. Spouse's Phone #</b>						
<b>5a. Service Member's Children</b>		First	Middle	Last	5b. Relation	5c. Birth Day 5d. Address City State Zip Code
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
<b>6a. Service Member's Father's Name</b>		First	Middle	Last		
<b>6b. Father's Address</b>		Street	City		State	Zip Code
<b>6c. Father's Phone #</b>						
<b>7a. Service Member's Mother's Name</b>		First	Middle	Last	Maiden	
<b>7b. Mother's Address</b>		Street	City		State	Zip Code
<b>7c. Mother's Phone #</b>						
<b>9a. Death Gratuity Beneficiary(ies)</b>		First	Middle	Last	First Middle Last	
<b>(if no spouse or children)</b>						
<b>9b. Address</b>		Street	City		State	Zip Code
<b>9c. Phone #</b>						
<b>10a. Beneficiary(ies) for Unpaid Pay &amp; Allowances</b>		First	Middle	Last	First Middle Last	
<b>10b. Address</b>		Street	City		State	Zip Code
<b>10c. Phone #</b>						
<b>11a. Person Authorized to Direct Disposition</b>		First	Middle	Last	Relationship	
<b>11b. Address</b>		Street	City		State	Zip Code
<b>11c. Phone #</b>						
<b>12a. Designated Person for Military Only</b>		First	Middle	Last	Relationship	
<b>12b. Address</b>		Street	City		State	Zip Code
<b>12c. Phone #</b>						

## Appendix E: CARES Data Linkage Structure

Data (verified and validated by CAOs) that are stored in CARES serve to auto-populate the casualty benefits and claims forms used by various organizations, including the Department of Defense, Department of Veterans Administration, and the Social Security Administration



## Distribution List

NAME/AGENCY	ADDRESS	COPIES
Author(s)	Department of Systems Engineering Mahan Hall West Point, NY 10996	2
Director, CMAOC	U.S. Army Casualty and Memorial Affairs Human Resources Command Washington, DC 20310-0200	1
Dean, USMA	Office of the Dean Building 600 West Point, NY 10996	1
Defense Technical Information Center (DTIC)	ATTN: DTIC-O Defense Technical Information Center 8725 John J. Kingman Rd, Suite 0944 Fort Belvoir, VA 22060-6218	1
Department Head-DSE	Department of Systems Engineering Mahan Hall West Point, NY 10996	1
ORCEN	Department of Systems Engineering Mahan Hall West Point, NY 10996	5
ORCEN Director	Department of Systems Engineering Mahan Hall West Point, NY 10996	1
USMA Library	USMA Library Bldg 757 West Point, NY 10996	1

<b>REPORT DOCUMENTATION PAGE – SF298</b>				<i>Form Approved</i> <i>OMB No. 0704-0188</i>	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. <b>PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.</b>					
<b>1. REPORT DATE (DD-MM-YYYY)</b> 25-06-2006		<b>2. REPORT TYPE</b> Technical Report		<b>3. DATES COVERED (From - To)</b> 01-08-2006    25-06-2006	
<b>4. TITLE AND SUBTITLE</b>  The Armed Forces Casualty Assistance Readiness Enhancement System (CARES): Design for Flexibility				<b>5a. CONTRACT NUMBER</b>	
				<b>5b. GRANT NUMBER</b>	
				<b>5c. PROGRAM ELEMENT NUMBER</b>	
<b>6. AUTHOR(S)</b> MAJ Ernest Y. Wong LTC Simon R. Goerger				<b>5d. PROJECT NUMBER</b> DSE-R-0619	
				<b>5e. TASK NUMBER</b>	
				<b>5f. WORK UNIT NUMBER</b>	
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> Operations Research Center of Excellence Dept. of Systems Engineering USMA 646 Swift Rd. West Point, NY 10996				<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b>  DSE-TR-0619	
<b>9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b> COL Mary Torgersen Director, US Army CMAOC Human Resources Command Washington, DC 20310-0200				<b>10. SPONSOR/MONITOR'S ACRONYM(S)</b>	
				<b>11. SPONSOR/MONITOR'S REPORT NUMBER(S)</b>	
<b>12. DISTRIBUTION / AVAILABILITY STATEMENT</b> Distribution A. Approved for public release; distribution is unlimited.					
<b>13. SUPPLEMENTARY NOTES</b>					
<b>14. ABSTRACT</b>  The families of fallen soldiers are required to complete a considerable number of forms in order to receive various benefits and entitlements from the Department of Defense, Department of Veterans Administration, Internal Revenue Service, and Social Security Administration. They must do so at a time when the families' grief is raw and normal tasks seem an unbearable burden. Active duty soldiers appointed Casualty Assistance Officers (CAOs) assist surviving families through the process. However, CAOs tend to be inexperienced, usually serving in this capacity for the first and only time, and they oftentimes find themselves challenged to provide accurate and thorough assistance. Moreover, changing laws and updated regulations regarding casualty entitlements add to the pressures and perplexities that many CAOs experience. As a consequence, some families do not receive all benefits and entitlements in a timely manner. Furthermore, in some instances potential benefits may be overlooked entirely. To help remedy these shortcomings, we have developed the Armed Forces Casualty Assistance Readiness Enhancement System (CARES)—an information system that improves how the Department of Defense cares for military families in arguably their greatest time of need.					
<b>15. SUBJECT TERMS</b> Casualty Assistance, Product Development, Information Technology, Transformation, Systems Automation					
<b>16. SECURITY CLASSIFICATION OF:</b> Unclassified			<b>17. LIMITATION OF ABSTRACT</b>  None	<b>18. NUMBER OF PAGES</b>  39	<b>19a. NAME OF RESPONSIBLE PERSON</b> MAJ Ernest Y. Wong
<b>a. REPORT</b> Unclassified	<b>b. ABSTRACT</b> Unclassified	<b>c. THIS PAGE</b> Unclassified			<b>19b. TELEPHONE NUMBER</b> (include area code) 845-938-4756